



# RAPS Workshop: Progress Report

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# What is RAPS?



- **ReaApplications on Parallel Systems**
- **European Software Initiative**
- **RAPS Consortium (founded early 90's)**
- **Working group of hardware vendors**
- **Programming model (MPI + F90/F95 + OpenMP)**

“The partners of the RAPS Consortium develop portable parallel versions of their production codes which are made available to a Working Group of Hardware Vendors for benchmarking and testing.”

# RAPS Consortium



**CCLRC**

**Fraunhofer SCAI/ITWM**

**CERFACS**

**Met Office UK**

**CSCS**

**MPI-M**

**DWD**

**METEO-FRANCE**

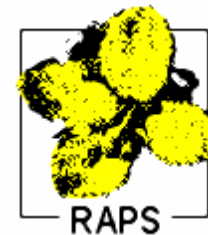
**DKRZ**

**NERC**

**ECMWF**

**ONERA**

# Working Group of Hardware Vendors



**Bull**

**INTEL**

**Cray**

**NEC**

**Fujitsu**

**SGI**

**Hitachi**

**SUN**

**HP**

**IBM**

# Why RAPS



- **Portability of codes (F90/F95, C/C++, MPI, OpenMP)**
- **Availability of benchmark codes ahead of a formal procurement**
- **Some influence on standardization (PARMACS -> MPI)**
  - Vendors needed to support F90 + MPI to run benchmarks
  - Are we ready to step up to F2003?
- **Regular meetings in past years (22 in total)**

# RAPS process



- **RAPS benchmarks distributed by individual organizations**
- **No official membership required for vendors**
- **Vendors approach (NDA) individual orgs for benchmarks**
- **Meetings**
  - **Once a year**
  - **Every 2 years as part of ECMWF 'Use of HPC in Meteorology workshop'**
  - **Chairmanship with host organization**

# RAPS benchmarks



- **Today**

- ECMWF IFS
  - DWD LM\_RAPS
  - Met Office UM
  - MPI-M ECHAM
- 
- **Commitment to produce **up to date** benchmarks reflecting key operational applications of consortium members**

# RAPS topics for this meeting



- **Fortran 2003**
- **Coarray Fortran (in Fortran 2008)**
  - Talks from John Reid and Bob Numrich
- **Scaling our applications for the future**
- **Tools**
  - Allinea Software
  - Totalview Technologies



# Fortran 2003



- **Discussed at the previous workshop**
- **Can we adopt Fortran 2003 for RAPS programming model?**
- **Some RAPS consortium members are planning to use Fortran 2003 features in the near future**
- **Propose that we develop a small set of kernels that use the Fortran 2003 features that we are interested in and provide these to RAPS hardware vendors (compiler development teams)**

# Capability v. Capacity



Can capability and capacity workloads continue to be satisfied by a single vendor architecture?

